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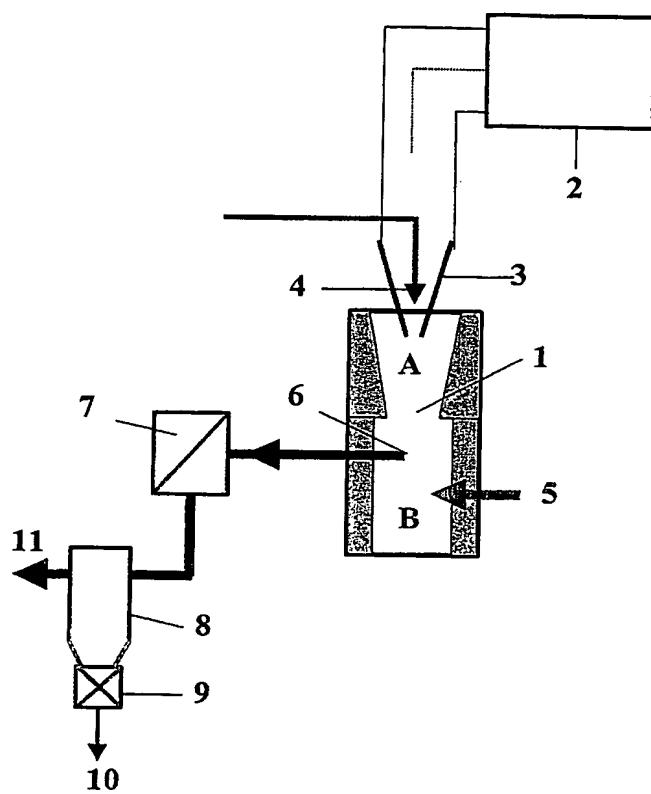
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(54) Title: CARBON NANOSTRUCTURES AND PROCESS FOR THE PRODUCTION OF CARBON-BASED NANOTUBES, NANOFIBRES AND NANOSTRUCTURES



(57) Abstract: Continuous process for the production of carbon-based nanotubes, nanofibres and nanostructures, comprising the following steps: generating a plasma with electrical energy, introducing a carbon precursor and/or one or more catalysers and/or carrier plasma gas in a reaction zone of an airtight high temperature resistant vessel optionally having a thermal insulation lining, vaporizing the carbon precursor in the reaction zone at a very high temperature, preferably 4000°C and higher, guiding the carrier plasma gas, the carbon precursor vaporized and the catalyser through a nozzle, whose diameter is narrowing in the direction of the plasma gas flow, guiding the carrier plasma gas, the carbon precursor vaporized and the catalyses into a quenching zone for nucleation, growing and quenching operating with flow conditions generated by aerodynamic and electromagnetic forces, so that no significant recirculation of feedstocks or products from the quenching zone into the reaction zone occurs, controlling the gas temperature in the quenching zone between about 4000°C in the upper part of this zone and about 50°C in the lower part of this zone and controlling the quenching velocity between 103 K/s and 106 K/s quenching and extracting carbon-based nanotubes, nanofibres and other nanostructures from the quenching zone, separating carbon-based nanotubes, nanofibres and nanostructures from other reaction products.



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